State of California

Memorandum

To : John S. Sanders, Branch Chief
Environmental Monitoring & Pest Management

Date : August 23, 1993

Place : Sacramento

Phone: 4-0546

From : **Department of Pesticide Regulation** - Donald J. Weaver and Joe Marade
Environmental Hazards Assessment Program

Subject : Summary of Results for FY 1992-93 Ground Water Protection List Monitoring

BACKGROUND

In 1992, a group of 45 pesticide active ingredients (ai's) included in the ground water protection list [Title 3, California Code of Regulations, Section 6800 (b)] were prioritized as previously described (1) and four of the ai's were monitored in seven counties (2). Those ai's were a part of the first priority group of ai's requiring that 25-40 wells be sampled (1). As a continuation of that effort, six of the 20 ai's remaining in the first priority group were monitored during FY 1992-93. This memorandum summarizes information on monitoring locations and analytical results for each ai.

METHODS

The ai's selected for monitoring were 2,4-D, diazinon, molinate, cyanazine, metribuzin, and hexazinone. All except hexazinone had had six wells sampled during the 1991 study conducted to test the procedures for determining the ground water protection list (3). Thus, 19-34 wells remained to be sampled for each ai in order to fulfill the 25-40 wells required in the ground water protection list monitoring protocol. We attempted to sample a portion of that number of wells during the FY 1992-93 survey.

Areas to be surveyed for potential well sampling locations were selected based on pesticide use reports for 1990. Sampling crews drove through preselected sections of land in each county and attempted to sample one well per section. At each well site, six water samples were collected for the appropriate ai, consisting of one primary, one field blank, and four backup samples. Minimum detection limits for the ai's were 0.05 parts per billion (ppb) for diazinon and 0.1 ppb for the other ai's. A second set of samples was also collected from each well and analyzed for atrazine, simazine, prometon, bromacil, and diuron each with an MDL of 0.1 ppb.

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	Weaver	Marade		

RESULTS

A total of 95 wells were sampled in 16 counties during February, March, and April, 1993. Numbers of wells sampled for each ai ranged from 7 to 23 and are presented by county in Table 1. None of the ai's from the ground water protection list was detected in any of the wells. Detections of simazine were confirmed in one well in Fresno County, one well in Glenn County and in two wells in Yolo County. One well was found positive for prometon in Glenn County and one for diuron in Fresno County.

FUTURE MONITORING

Additional wells will be sampled during FY 1993-94 to complete the sampling requirements for 2,4-D, cyanazine, diazinon, hexazinone, and metribuzin. No additional monitoring will be done for molinate since a total of 29 wells have already been sampled. Between 25 and 40 wells will also be sampled for up to three additional ai's from the first priority group.

REFERENCES

1. Memorandum from D. Weaver to J. Sanders, March 9, 1992. Prioritization of chemicals on ground water protection list.

2. Memorandum from D. Weaver and J. Marade to K. Goh, July 15, 1992. Summary of results for FY 1991-92 ground water protection list monitoring.

3. Johnson, B. R., et al. 1992. A test of procedures for determining the ground water protection list. EHAP Report EH 92-06.

cc: K. Goh
M. Pepple
C. Maes
B. Johnson
J. Troiano

Table 1. Wells sampled for six ground water protection list ai's in 1993.

	Number of wells sampled for:					
County	2,4-D	Cyanazine	Diazinon	Hexazinone	Metribuzin	Molinate
Butte						6
Colusa	5					4
Fresno		3	4	6		
Glenn	1					6
Kern		4				
Kings	1					
Madera			4			
Merced			4	5		
Placer						1
Sacramento	5					
San Joaquin				4	4	
Solano	2					
Stanislaus			4			
Sutter					1	5
Yolo	5				10	
Yuba						1
Totals	19	7	16	15	15	23

State of California

Memorandum

To John Sanders
Agricultural Program Supervisor
Environmental Hazards Assessment Program

Date : March 9, 1992

Place : Sacramento

Phone: 4-0546

From **Department of Pesticide Regulation** Don Weaver, Sr. Env. Research Scientist
Environmental Hazards Assessment Program

Subject Prioritization Of Chemicals On Groundwater Protection List

In order to prepare for monitoring the pesticide active ingredients (ai's) on the Ground Water Protection List, we have reviewed the ai's included in the 6800 (b) list for 1991. Of the 49 ai's to be prioritized, 4 ai's (fluometuron, naptalam-sodium salt, triallate and vernolate) are no longer registered for agricultural use in California. The list of the remaining 45 ai's includes:

acephate	diquat dibromide	methyl isothiocyanate
alachlor	disulfoton	metribuzin
aldicarb	EPTC	molinate
azinphos-methyl	ethofumesate	napropamide
bensulide	ethoprop	norflurazon
butylate	fenamiphos	oryzalin
chloropicrin	fonofos	oxadiazon
chlorsulfuron	fosetyl-Al tech.	oxydemeton-methyl
cyanazine	hexazinone	parathion
cycloate	linuron	pebulate
diazinon	metalaxyl	prometryn
dichlobenil	metaldehyde	propyzamide
dichloran	methiocarb	sulfometuron-methyl
diethatyl-ethyl	methomyl	tebuthiuron
dimethoate	metolachlor	2,4-D, dimethylamine

These ai's were prioritized for monitoring according to the "Protocol for ranking the ground water protection list for contamination potential and for subsequent monitoring under commercial agricultural conditions" and placed into the appropriate priority groups.

During the remainder of FY 1991-92, wells will be sampled for four of the ai's in the first priority group. Thereafter, additional ai's will be monitored each year. When a new 6800 (b) list is put into regulation, all remaining ai's from the current list will be reprioritized along with those on the new list.

Attachments

cc: Ronald J. Oshima
Mark Pepple
Kean Goh
Candace Maes
Nancy Miller
Joey Marade

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Attachment 'A'

I. First Priority (Sample 25-40 wells)

A. Found in ground water, non-point source, 16 ai's (Information obtained from Bruce Johnson)

alachlor	fonofos
aldicarb	hexazinone
azinphos-methyl	linuron
butylate	metalaxyl
cyanazine	metolachlor
diazinon	metribuzin
EPTC	molinate
ethoprop	2,4-D, dimethylamine

B. SB 950 high priority, 8 ai's (Med. Tox., SB 950 Report #24, 10/18/91)

cycloate	methyl isothiocyanate
dichlobenil	oxadiazon
diquat dibromide	oxydemeton-methyl
fenamiphos	parathion

II. Second Priority (Sample 15-25 wells)

A. Pounds ai applied in California, 9 ai's (Attachment B)

chloropicrin	pebulate
methomyl	prometryn
dimethoate	napropamide
oryzalin	dichloran
acephate	

B. Soil mobility, 3 ai's (water solubility, Attachment C)

tebuthiuron
chlorsulfuron
fosetyl-Al tech.

III. Third Priority, 9 ai's (Sample 10-15 wells)

metaldehyde	disulfoton
ethofumesate	bensulide
diethatyl-ethyl	propyzamide
methiocarb	sulfometuron-methyl
norflurazon	

'Attachment B'

POUNDS OF PESTICIDE AI'S APPLIED, PESTICIDE USE REPORT

Pesticide AI	Pounds applied	Use Rank
*Chloropicrin	2,248,653	Very High
*Methomyl	881,748	High
*Dimethoate	880,402	
*Oryzalin	677,196	
*Acephate	406,498	
*Pebulate	403,348	
*Prometryn	284,272	
*Napropamide	281,376	
*Dichloran	254,896	
Disulfoton	187,907	Moderate
Propyzamide	178,508	
Fosetyl-Al Tech.	169,237	
Norflurazon	128,659	
Diethatyl-ethyl	109,671	
Bensulide	64,310	Low
Metaldehyde	42,872	
Ethofumesate	12,440	
Sulfometuron-methyl	9,283	Very Low
Tebuthiuron	7,521	
Methiocarb	6,564	
Chlorsulfuron	889	

* Placed in second priority group

'Attachment C'

DATA OBTAINED FROM AGROCHEMICALS HANDBOOK (1987)

Active Ingredient	Water sol. (mg/l	Soil Persistence
Sulfometuron-methyl	10	Approx. 4 weeks
Propyzamide	15	Approx. 30 days
Bensulide	25	4-12 month active
Disulfoton	25	No data
Norflurazon	28	No data
Methiocarb	30	No data
Diethatyl-ethyl	105	6-10 weeks
Ethofumesate	110	5-14 weeks
Metaldehyde	200	No data
* Tebuthiuron	2300	moderate to long
* Chlorsulfuron	27900	4-6 weeks
* Fosetyl-Al Tech.	120000	No data

* Placed in second priority group